

: If *Grapsus* is to be entirely removed from the Brachyura, the name *Grapsoidæ* cannot be retained for a Brachyurous group. In the group in question, *Planes*, Leach (*Nautilograpsus*, M.-E.), is the oldest genus; and I therefore provisionally give this group the name of *Planidæ*. But I also give up the name of Brachyura altogether; for *Grapsus* and the *Dromidæ* are Brachyura in respect of their abdomen. I rather group together all those Decapoda of which the external antenna exhibits an operculum, as *Opercularia*, and call all the remainder *Tubercularia*, because their outer antenna presents a tubercle. I consequently also get rid of the section Anomura, which hitherto included the forms which, in regard to the structure of the abdomen, constituted the transition from the Macrura to the Brachyura. With respect to the structure of the external antennæ, the Anomura agree throughout with the Macrura: even the *Lithodidæ* and *Paguridæ* exhibit more or less of the antennal scale.

The Opercularia consequently include all the genera cited by Dana as Brachyura, with the exception of the genus *Grapsus* in the restricted sense; but, in compensation, the *Bellidea*, placed by Dana amongst the Anomura, fall into this group.

XXXV.—*A Catalogue of the Zoophytes of South Devon and South Cornwall.* By the Rev. THOMAS HINCKS, B.A.

[Continued from p. 207.]

Fam. Celleporidæ.

CELLEPORA, Fabricius.

Section α . *Encrusting, adnate.*

1. *C. pumicosa*, Linnæus.

Very common, on stones, shells, *Sertulariada*, &c.

This species is of very variable aspect. Sometimes it forms small oval masses on the stems of Zoophytes. This is the condition figured by Mr. Busk (Catal. pl. 110. fig. 4). When developed on the surface of shells, &c., it forms somewhat circular *mounds*, raised in the centre and sloping off towards the edge. Sometimes it occurs in irregularly-shaped porous masses, of very considerable size, involving more or less the fragment of shell or other body which constituted the original support of the polyzooary. A specimen of this description from Torbay measures about $3\frac{1}{4}$ inches in length, $2\frac{1}{2}$ inches in width, and $1\frac{1}{4}$ inch in thickness.

Much as this differs in general appearance from the smaller

varieties, I can find no distinction between them in the minute characters.

2. *C. Hassallii*, Johnston.

Occasional, on shells and stone; on *Anomia* from Plymouth; on stone from 30 fathoms, Cornwall (very fine), &c.

3. *C. edax*, Busk, 'Polyzoa of the Crag,' p. 59, pl. 9. fig. 6,
pl. 22. fig. 3.

On a *Turritella* (?) from Plymouth.

Of this very curious form I have only obtained the single specimen referred to by Mr. Busk in his 'Monograph;' and I am not aware that any other *recent* example has occurred. It seems to be not uncommon in the Coralline Crag.

The Devonshire specimen, which has been moulded on a small univalve shell, probably a *Turritella*, is in very fresh condition, and shows the minute characters well. Like its fossil kindred, the Cellepore has completely removed the substance of the shell on which it originally took up its abode. Nothing now remains but the *form*, which is perpetuated by the stony crust of the Polyzoon.

A strictly analogous case occurs amongst the *Actinozoa*. A *Zoanthus* has been described by Düben and Koren, under the name of *Mamillifera incrustata*, which is commonly parasitic on shells that are tenanted by a species of *Pagurus*. In all cases, however, the shell is destroyed after a while by some process of erosion or absorption, the diffused basal crust of the Zoophyte forming a perfect cast of it, and affording shelter to the crab. This form occurs in Shetland and the north of England, as well as in Norway, and is regarded by Mr. Gosse as a variety of *Z. Couchii*. Taking into account, however, the differences in the number and colour of the tentacles, which the northern naturalists have pointed out, and in the characters of the base, as well as the remarkable peculiarity just referred to, I am inclined to regard the *M. incrustata* as a distinct species.

4. *C. avicularis*, Hincks. Pl. XII. figs. 6, 6a.

'Microscopical Journal,' vol. viii. p. 278.

Common, encrusting the stems and branches of Zoophytes from deep water, with large and nodulous rolls. The *Gorgonia* is frequently laden with masses of it.

This is one of the best-marked of the crustaceous Cellepores—a most perplexing tribe to deal with. After the repeated examination of a multitude of specimens, I find myself quite unable to speak with confidence as to the forms which are entitled to specific rank; indeed the bewilderment increases with the number of specimens examined.

The *C. avicularis*, however, is well marked and readily recognized. The cells are crowded, erect, uneven, some being elevated considerably above the others; the orifice orbicular above, with a pointed sinus below; the peristome elevated into a border, and rising in front into a rostrum, which bears an oval avicularium on one side of it; ovicell prominent, subglobose, punctured—generally an ascending process on each side of it, bearing a small oval avicularium; here and there amongst the cells, large mounted avicularia, with broad triangular mandible; spatulate avicularia distributed over the surface of the polyzoary. The number and variety of the avicularian appendages in this species are remarkable.

Numerous circular apertures are distributed over the polyzoary amongst the cells.

5. *C. tubigera*, Busk, 'Crag Polyzoa,' p. 60, pl. 22. fig. 2.

To this species I refer (not without some doubt) two specimens obtained from Plymouth. They form subconical masses, the surface of which is covered with irregular prominences. The cells are distant and very distinct, sometimes connected by ridges, punctured round the orifice; orifice orbicular, with a sinus below; a process in front, bearing, near the top, an oval avicularium; occasionally amongst the cells other stouter processes, supporting larger avicularia; spatulate avicularia numerous.

Section β . *Erect, branching.*

6. *C. ramulosa*, Linnæus.

Very common, on Zoophytes from deep water: off Exmouth (fine); Cornwall (30 fathoms), &c.

7. *C. dichotoma*, n. sp. Pl. XII. figs. 7, 8.

Polyzoarium slender, narrowed towards the base, dichotomously branched; branches cylindrical, tapering towards the extremities, pointed; cells ovate, ventricose, smooth; orifice orbicular above, slightly produced below, in front of it a short and tumid rostrum, with a small avicularium on one side of it, near the top; ovicell globose, silvery, covered in front with punctures, the margins of which are raised; occasionally a spatulate avicularium on one side of the orifice; numerous minute sub-circular avicularia distributed amongst the cells. The surface of the polyzoary is pierced by circular orifices, which occupy the intercellular spaces.

On Zoophytes from 30 fathoms, off Polperro.
[Ireland.]

Fam. Escharidæ.

1. ESCHARA, Ray.

1. *E. foliacea*, Ellis & Solander.

Common in deep water, Devon and Cornwall: off Budleigh-Salterton (very abundant), Exmouth, &c.

2. *E. cervicornis*, Busk, 'Catalogue,' p. 92.

Common on stones from deep water, coast of Cornwall; 'Devonshire' (*Dr. Coldstream*).

Great uncertainty exists as to the synonymy of this species. The form here intended is the *Cellepora cervicornis* of Couch's 'Cornish Fauna,' which would seem to be identical with the *Eschara cervicornis* of the 'British Museum Catalogue,' judging from the *description* in that work. Mr. Busk, however, in a paper on Norwegian Polyzoa (*Ann. Nat. Hist.* for 1856, vol. xviii. p. 32), expresses an opinion that these are distinct species, identifying Mr. Couch's with a Norwegian form, of which a figure (without description) is given. The figure, which is not from Mr. Busk's hand, is of little value, and does not help towards a settlement of the point. At present I am inclined to regard the *C. cervicornis* of Johnston and Couch and the *E. cervicornis* of the 'Catalogue' as one species. The *Millepora cervicornis* of Ellis and Solander is a perfectly distinct form.

3. *E. Skenei*, Ellis & Solander.

Not common, deep water: Torbay, on shell; off Polperro. "On stones and the *Pinna ingens*, off the Deadman; rare" (*Couch*).

2. RETEPORA, Lamarck.

R. Beaniana, King.

Very rare: on a stone from 40 fathoms, south-west of Polperro. A very fine full-grown specimen of this beautiful Coral, and one or two young ones, were obtained from the above locality.

[Shetland (*Barlee*); off the Land's-End (*Couch*)].

Suborder Cyclostomata, Busk.

Fam. Idmoneidæ, Busk.

PUSTULOPORA, Blainville.

P. deflexa, Couch.

Common on stones, shells, &c., from deep water: coast of Cornwall, abundant; dredged close under Berry Head, on weed.

The erect cylindrical stalks are the free extremities of a branched creeping base, which spreads, like an *Alecto*, over the surface of shell or stone. A number of branches radiate from a common stem, along which tubular cells are ranged, and each of these branches terminates in a free portion, somewhat clavate, at times expanding into an enlarged head, from all sides of which long waved tubes project. Mr. Couch has not described the common creeping base. It would pass for an *Alecto*, in the absence of the erect portions.

I feel much doubt whether this form is correctly referred to the genus *Pustulopora*. It is probably the *Tubulipora deflexa* of Couch, the free and erect branches agreeing exactly with his description and figure. But no mention is made by him of a branched creeping stem, nor is there any in the diagnosis of *Pustulopora* as given by De Blainville, Johnston, or Busk. In a beautiful specimen dredged near Berry Head, the free portions are dichotomously branched, the branches terminating in a triplet of clavate expansions. From the nature of the habitat, the creeping stem is in this case very inconspicuous; but on stone there is little variation in the form. The creeping branches which radiate from a common stem are adnate through a great part of their course, and bristle with long tubes, but towards the extremities they become erect, cylindrical, subclavate, and bear the cells on all sides. The surface is punctate. This species has the closest affinity with *Alecto*.

Fam. Tubuliporidæ, Busk.

1. TUBULIPORA, Lamarck.

1. *T. serpens*, Linn.

Very common, on stones, shells, and Zoophytes from deep water: on *Pinna* from 60 fathoms, off the Deadman; on *Gorgonia* (very fine), &c.

Some of the specimens on *Pinna* exhibit a very beautiful mode of growth. They are of radiate form, attached to the shell at the centre only, the bifid branches being free and sub-erect.

2. *T. lobulata*, Hassall.

Occasional, on shell: Torbay.

This is probably a good species, and not, as Dr. Johnston was inclined to consider it, a variety of the preceding.

There are important differences between the two forms, in the character and disposition of the cells as well as in the mode of growth. The cells of *T. lobulata* are short and stout, and project very slightly from the crust. They are horizontal, and are

generally not united, nor do they ever form the deep, somewhat curved, transverse rows which are so characteristic of *T. serpens*. The dividing lines are much less strongly marked than in the latter species, and disappear altogether in the expanded portions which terminate the lobes. The lobes or segments are linear and narrow, and more or less rounded at the extremities. Those of *T. serpens* are usually truncate. The polyzoary is depressed, and of a dull-purplish colour, wanting altogether the bright frosted surface of the other species.

The "flower-like" variety of *T. serpens*, which Mr. Alder identifies with the *T. lobulata* of Hassall (Northumb. Catal. p. 46), may be the radiate form which I have described under the first-named species.

[Isle of Man, very common on old shells.]

3. *T. phalangea*, Couch.

Common on shells and weed in moderate depths: Salcombe Bay (abundant), &c.

Cornwall, "in from 10 to 20 fathoms water, common" (*Couch*).

This fine species exhibits two marked forms. In one, the polyzoary is subcircular or very obscurely lobed; the cells are long, slender, sub-erect, and somewhat flexuous, crowded together, and often disjunct at the upper extremity; the mesial dividing lines are almost obliterated. In the other, the lobes are distinct and pointed; the cells are short, united throughout, of somewhat larger bore than in the preceding, and arranged with extreme regularity on each side of a well-defined line, which runs from the centre to the extremity of each lobe. The spaces between the lobes are filled with cells, sometimes united in pairs, sometimes single. Towards the margin they are horizontal and wholly immersed, the apertures forming a close network. In this beautiful form the polyzoary is much depressed, and the surface flat.

To this species perhaps may be referred a remarkable *Tubulipora* which I have met with in old bivalve shells from Salcombe Bay. It forms large, somewhat circular, lobate masses, about an inch in diameter. The central portion is round, with sometimes as many as ten lobes, which are broad at the base, then gradually narrow for some way, and at the extremity expand into a clavate head. The heads, which vary in size, occasionally coalesce, and in some cases the lobes are united throughout the greater part of their length, and we have a somewhat circular crust with a very irregular and jagged outline. On the central disk and the basal portion of the lobes the cells are arranged as in the normal *T. phalangea*. On the enlarged heads

they are disposed in somewhat radiate fashion. This curious variety, deprived of its terminal expansions, bears a striking resemblance to the *Solaster*. In form and general appearance it is utterly unlike the ordinary *T. phalangea*; and yet, such is the tendency to irregularities of growth and habit in this section of the *Cyclostomata*, that I do not venture to regard it as more than a very singular illustration of this characteristic.

In an early stage, *T. phalangea* exhibits a simple bilobed form, and is often of very delicate texture and of a silvery lustre. In this condition the polyzoarium is stalked, and divided into two rounded lobes, which are bent backwards from the point of division, so as to embrace the stalk, below which they finally coalesce. As growth proceeds, other lobes are developed on the *opposite* side, until the normal figure is completed.

4. *T. flabellaris*, Fabricius.

Rare: in a valve of *Pecten*, from the Brixham trawl-boats; on stone.

One or two specimens only have occurred to me in the West of the species figured by Johnston (pl. 46. figs. 5, 6), and which he identifies with the *Tubipora flabellaris* of Fabricius.

[Near the mouth of the Clyde, on coal.]

5. *T. penicillata*, Johnston.

On the Cornish *Pinnae*, common; on stone from 40 fathoms; in a shell from Torbay.

In this species, the erect portion, which bears the expanded celluliferous head, springs from a creeping *Alecto*-like base, which is thickly set with tubes. This creeping stem is commonly branched, and at the extremity of each branch rises one of the disk-bearing stalks. The lower portion of the stalk frequently bears a number of the tubular cells on one side, which are free, and of considerable length. There is great diversity in the height of the peduncular support and in the size of the terminal disk. Mr. Couch, in his description, takes no notice of the creeping base. Should not the genus *Alecto* be modified so as to include both this species and the *Pustulopora deflexa* of Johnston?

[Lamlash, Arran, on stone.]

2. *ALECTO*, Lamouroux.

A. granulata, Milne-Edwards.

“On stones and shells from deep water, not uncommon; Polperro” (*Couch*).

EXPLANATION OF PLATE XII.

- Fig. 1. *Membranipora discreta*, n. sp.
 Fig. 2. *Lepralia affinis*, n. sp.
 Fig. 3. *Lepralia ochracea*, n. sp.
 Fig. 4. *Lepralia hastata*, n. sp.: 4 a, rostrum, with avicularium.
 Fig. 5. *Lepralia armata*, n. sp.
 Fig. 6. *Cellepora avicularis*, Hincks: 6 a, the præoral rostrum.
 Fig. 7. *Cellepora dichotoma*, n. sp.; nat. size.
 Fig. 8. *Cellepora dichotoma*; portion magnified.
 Fig. 9. *Valkeria tremula*, n. sp.

[To be continued.]

XXXVI.—*Note on the Temperature of the Female Python Sebæ during Incubation.* By P. L. SCLATER, Ph.D., F.R.S.

IN the communication made to the French Académie des Sciences Naturelles, in 1841, by M. Valenciennes, and published in their 'Comptes Rendus' for July of that year (vol. xiii. p. 126), certain results are stated to have been arrived at from careful observations made during the incubation of a female of the Indian Python (*Python bivittatus*), which deposited eggs in the menagerie of the Jardin des Plantes on the 5th of May 1841, and hatched out eight young ones on the 3rd of July following. M. Valenciennes's own words on this subject are as follows:—"Il faut conclure de cette observation que la femelle du *Python bivittatus* couve ses œufs, qu'ils sont cinquante-six jours au moins à éclore, et que pendant ce temps l'animal développe une chaleur propre qui diminue cependant graduellement à mesure que l'on approche du moment de l'éclosion des œufs." From the table of observations which is appended to M. Valenciennes's article, it appears that the heat of the incubating female decreased gradually from 41°·5 Cent. (when she first commenced incubation) to 28° Cent. (when the young Pythons were produced),—the temperature of the chamber in which she was kept varying meanwhile from 17° to 23° Centigrade.

When the female *Python Sebæ* in the Zoological Society's reptile-house deposited eggs on the 13th of January last, and commenced sitting upon them, it became a matter of much interest to ascertain whether M. Valenciennes's views as to the evolution of heat by the incubating Python could be substantiated. The thermometers we first used for these experiments being found imperfect, Messrs. Negretti and Zambra, the well-known instrument-makers, on being applied to, kindly supplied us with others of great nicety, manufactured specially for the purpose.

The following is the result, in a tabular form, of the observations made with these instruments by Mr. A. D. Bartlett, the